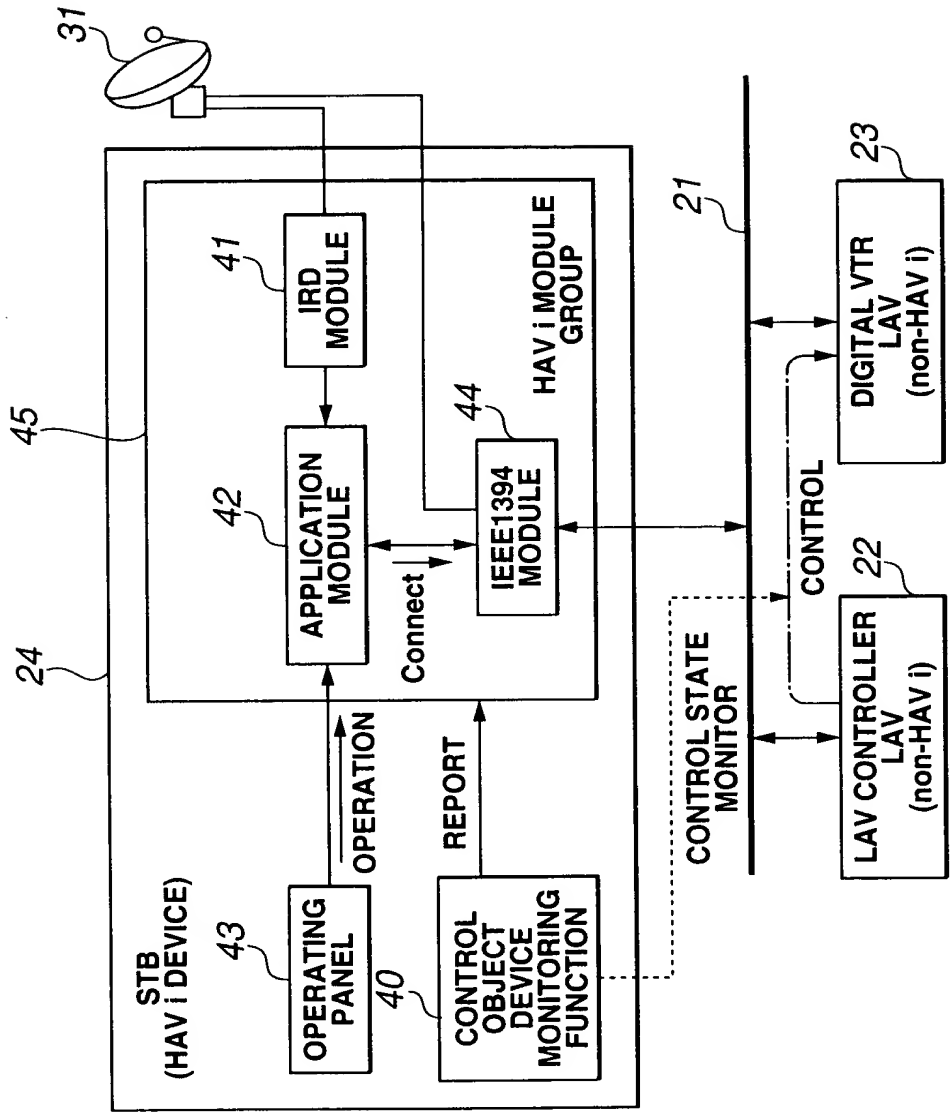
31
45
24
41
IRD MODULE
42
APPLICATION MODULE
44
IEEE1394 MODULE
HAV i MODULE GROUP
Connect
OPERATION
REPORT
STB (HAV i DEVICE)
43
OPERATING PANEL
40
CONTROL OBJECT DEVICE MONITORING FUNCTION
CONTROL STATE MONITOR
21
CONTROL
23
DIGITAL VTR LAV (non-HAV i)
22
LAV CONTROLLER LAV (non-HAV i)

FIG.1

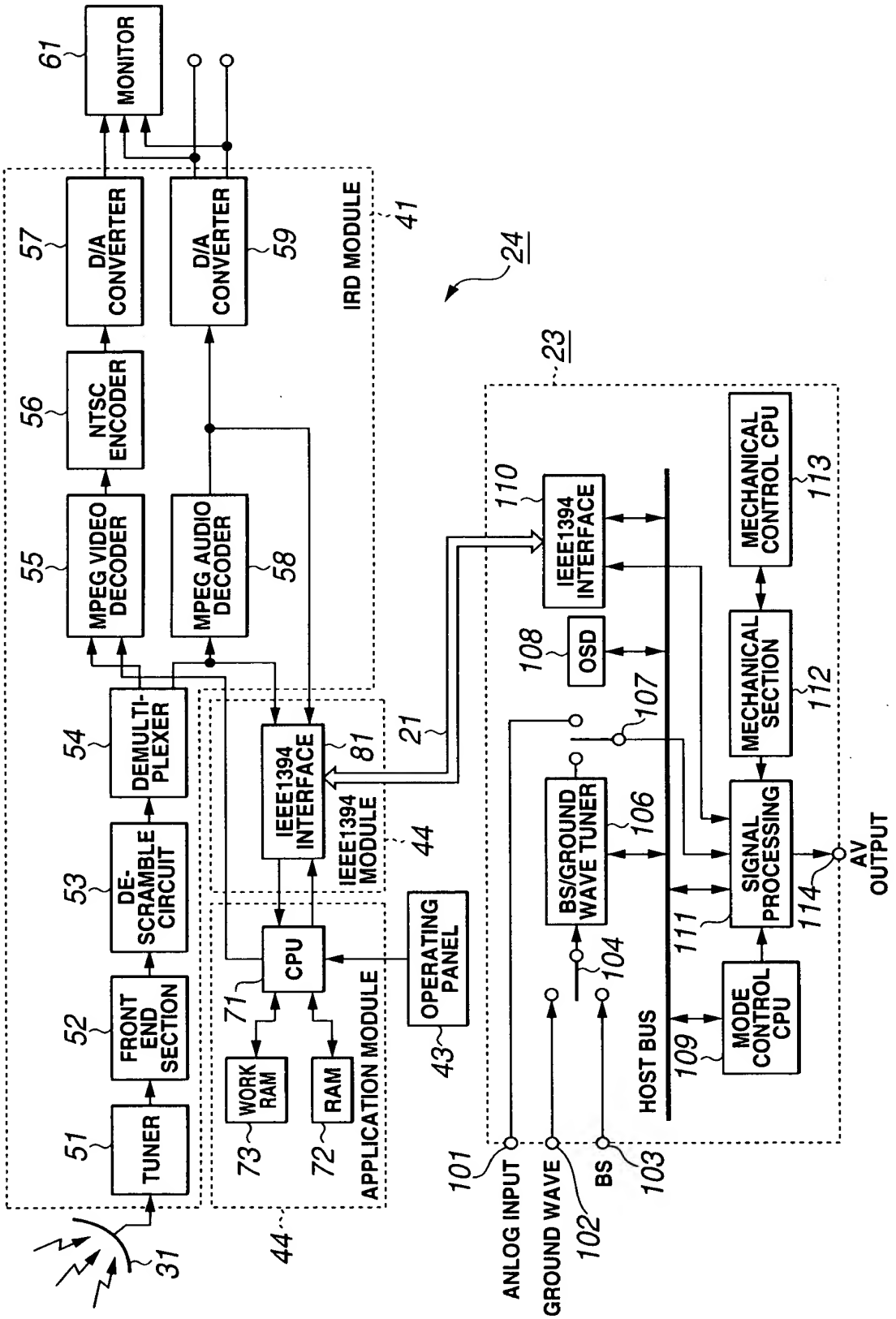
61
MONITOR
57
D/A CONVERTER
59
D/A CONVERTER
IRD MODULE
41
24
23
56
NTSC ENCODER
55
MPEG VIDEO DECODER
58
MPEG AUDIO DECODER
54
DEMULTI-PLEXER
53
DE-SCRAMBLE CIRCUIT
52
FRONT END SECTION
51
TUNER
31
IEEE1394 INTERFACE
81
21
IEEE1394 MODULE
44
CPU
71
WORK RAM
73
RAM
72
APPLICATION MODULE
OPERATING PANEL
43
110
IEEE1394 INTERFACE
108
OSD
107
BS/GROUND WAVE TUNER
106
104
HOST BUS
109
MODE CONTROL CPU
111
SIGNAL PROCESSING
114
AV OUTPUT
MECHANICAL SECTION
112
MECHANICAL CONTROL CPU
113
101
ANLOG INPUT
102
GROUND WAVE
BS
103

FIG.2

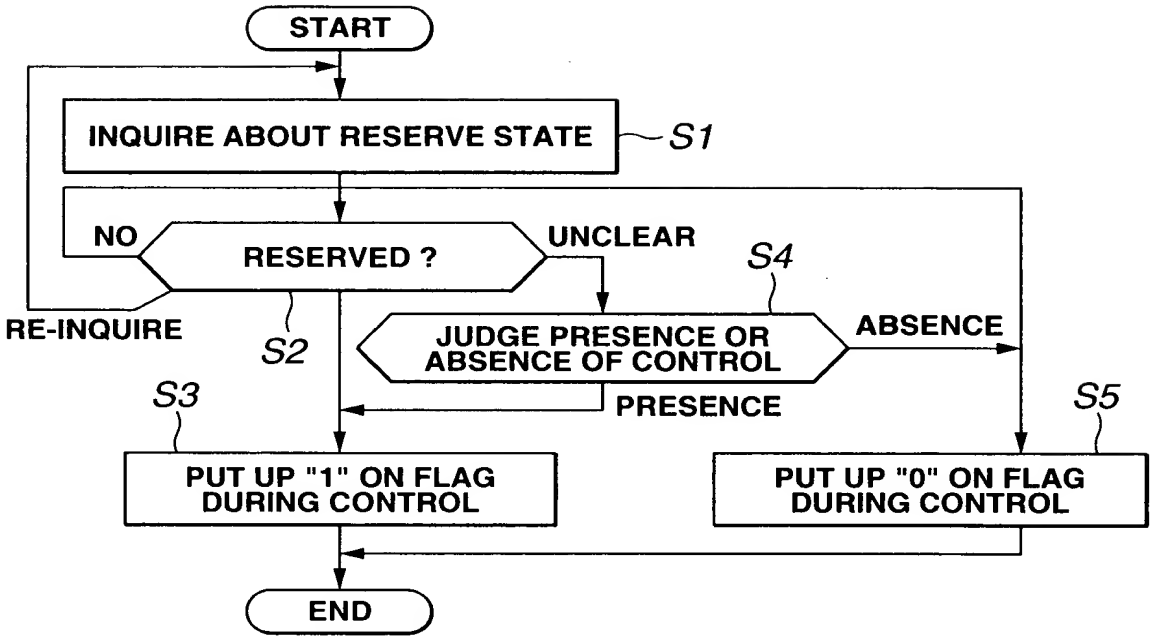
START
INQUIRE ABOUT RESERVE STATE
S1
NO
RESERVED ?
UNCLEAR
S4
RE-INQUIRE
S2
JUDGE PRESENCE OR ABSENCE OF CONTROL
ABSENCE
PRESENCE
S3
S5
PUT UP "1" ON FLAG DURING CONTROL
PUT UP "0" ON FLAG DURING CONTROL
END

FIG.3

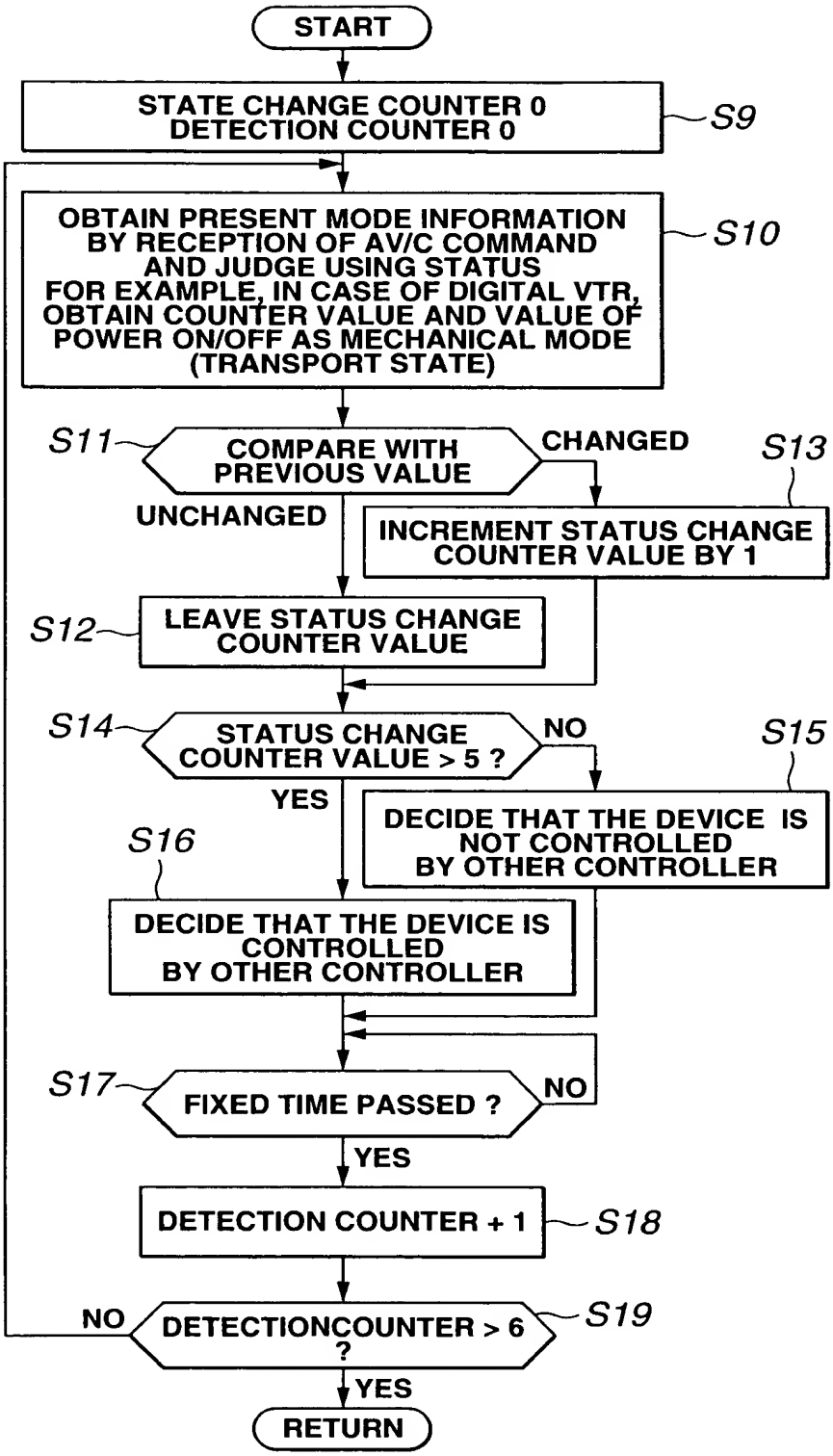
START
STATE CHANGE COUNTER 0
DETECTION COUNTER 0
S9
OBTAIN PRESENT MODE INFORMATION BY RECEPTION OF AV/C COMMAND AND JUDGE USING STATUS FOR EXAMPLE, IN CASE OF DIGITAL VTR, OBTAIN COUNTER VALUE AND VALUE OF POWER ON/OFF AS MECHANICAL MODE (TRANSPORT STATE)
S10
S11
COMPARE WITH PREVIOUS VALUE
CHANGED
S13
UNCHANGED
INCREMENT STATUS CHANGE COUNTER VALUE BY 1
S12
LEAVE STATUS CHANGE COUNTER VALUE
S14
STATUS CHANGE COUNTER VALUE > 5 ?
NO
S15
YES
DECIDE THAT THE DEVICE IS NOT CONTROLLED BY OTHER CONTROLLER
S16
DECIDE THAT THE DEVICE IS CONTROLLED BY OTHER CONTROLLER
S17
FIXED TIME PASSED ?
NO
YES
DETECTION COUNTER + 1
S18
NO
DETECTIONCOUNTER > 6 ?
S19
YES
RETURN

FIG.4

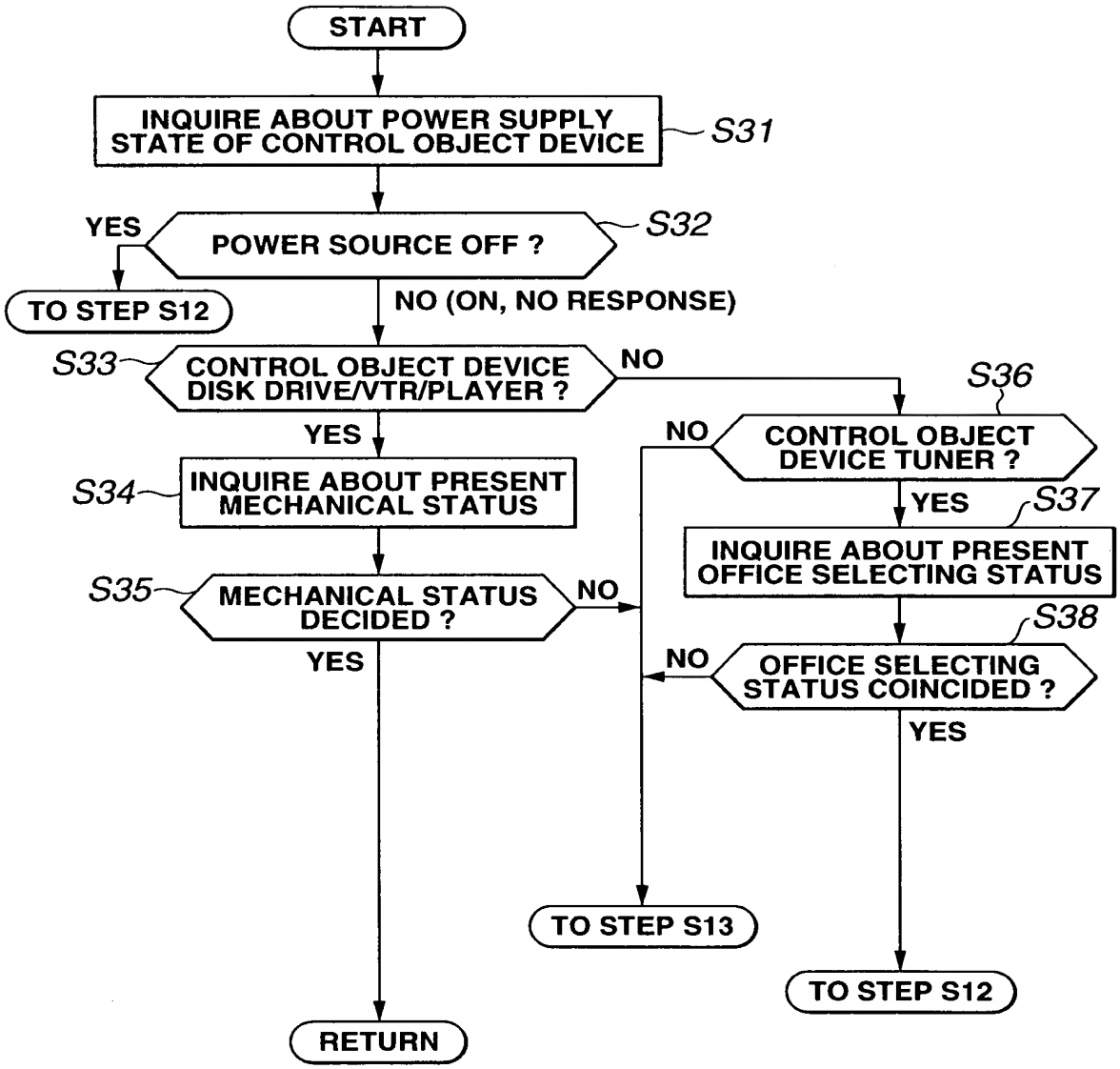
START
INQUIRE ABOUT POWER SUPPLY STATE OF CONTROL OBJECT DEVICE
S31
YES
POWER SOURCE OFF ?
S32
TO STEP S12
NO (ON, NO RESPONSE)
S33
CONTROL OBJECT DEVICE DISK DRIVE/VTR/PLAYER ?
NO
S36
YES
NO
CONTROL OBJECT DEVICE TUNER ?
S34
INQUIRE ABOUT PRESENT MECHANICAL STATUS
YES
S37
INQUIRE ABOUT PRESENT OFFICE SELECTING STATUS
S35
MECHANICAL STATUS DECIDED ?
NO
S38
YES
NO
OFFICE SELECTING STATUS COINCIDED ?
YES
TO STEP S13
TO STEP S12
RETURN

FIG.5

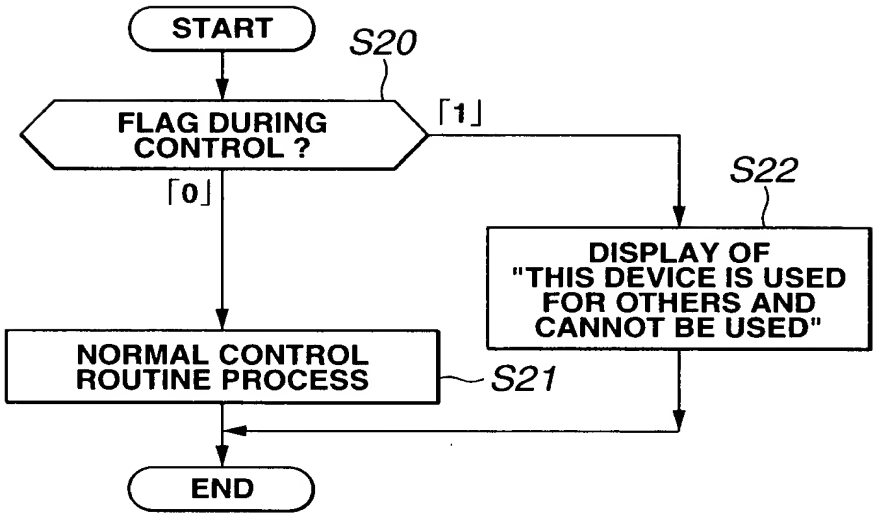
START
S20
FLAG DURING CONTROL ?
「1」
「0」
S22
DISPLAY OF "THIS DEVICE IS USED FOR OTHERS AND CANNOT BE USED"
NORMAL CONTROL ROUTINE PROCESS
S21
END

FIG.6

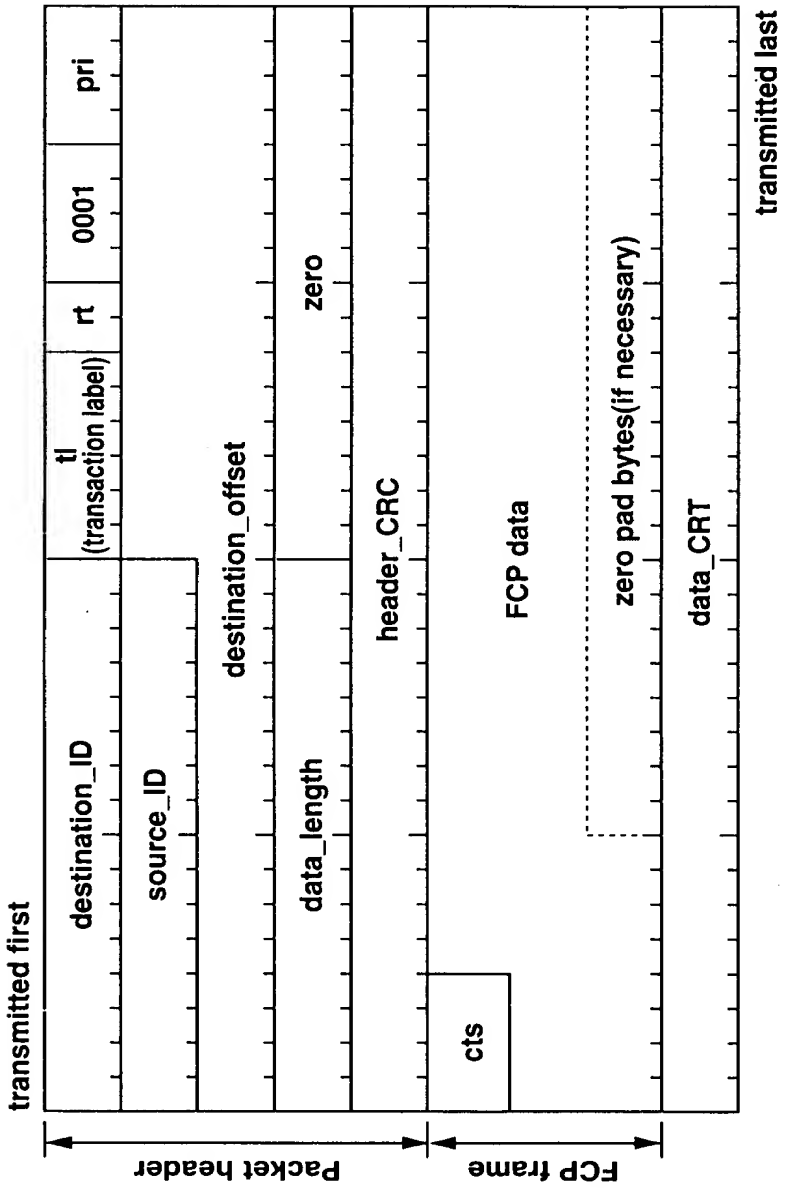
transmitted first
destination_ID
source_ID
tl (transaction label)
rt
0001
pri
destination_offset
data_length
zero
header_CRC
cts
FCP data
zero pad bytes(if necessary)
data_CRT
transmitted last
Packet header
FCP frame

FIG.7

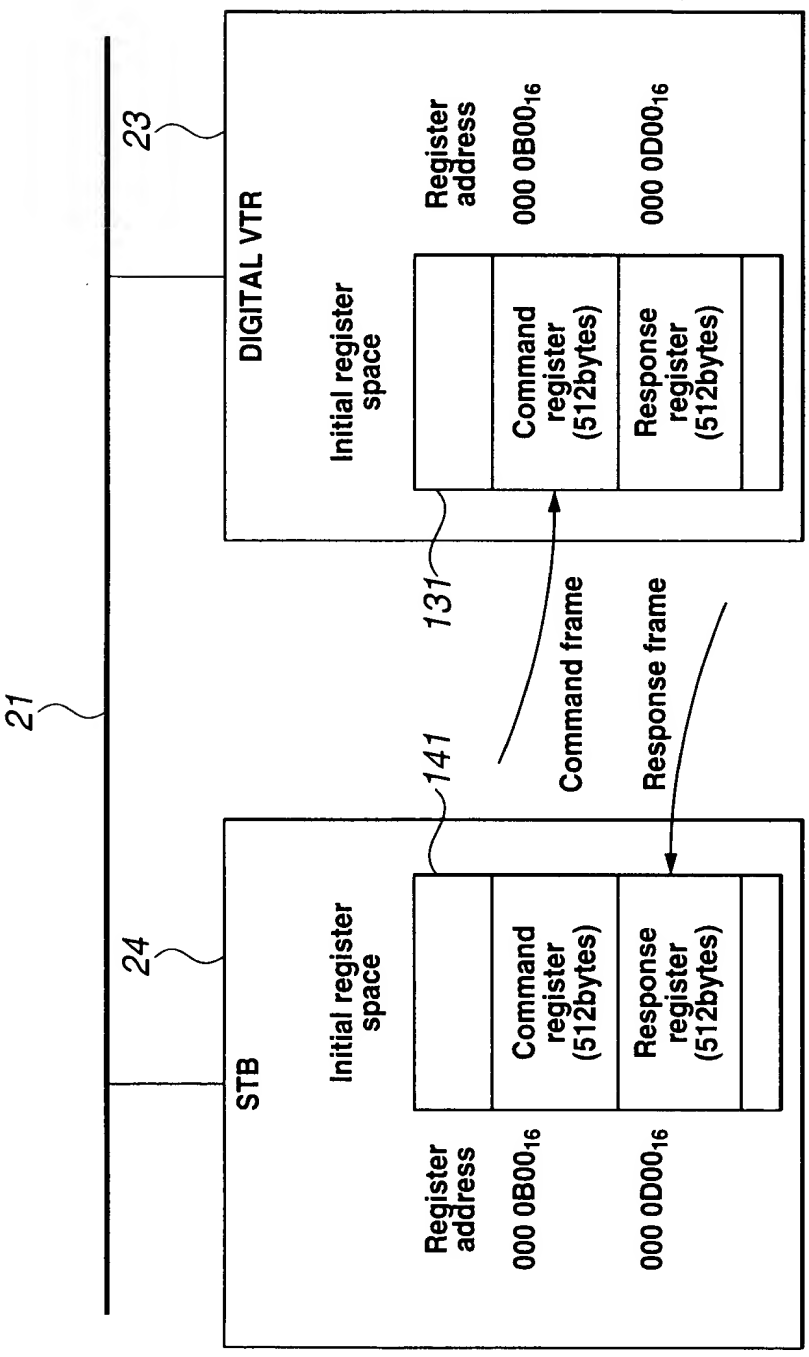
21
23
DIGITAL VTR
Initial register space
Register address
000 0B00$_{16}$
000 0D00$_{16}$
Command register (512bytes)
Response register (512bytes)
131
Command frame
Response frame
141
24
STB
Initial register space
Register address
000 0B00$_{16}$
000 0D00$_{16}$
Command register (512bytes)
Response register (512bytes)

FIG.8

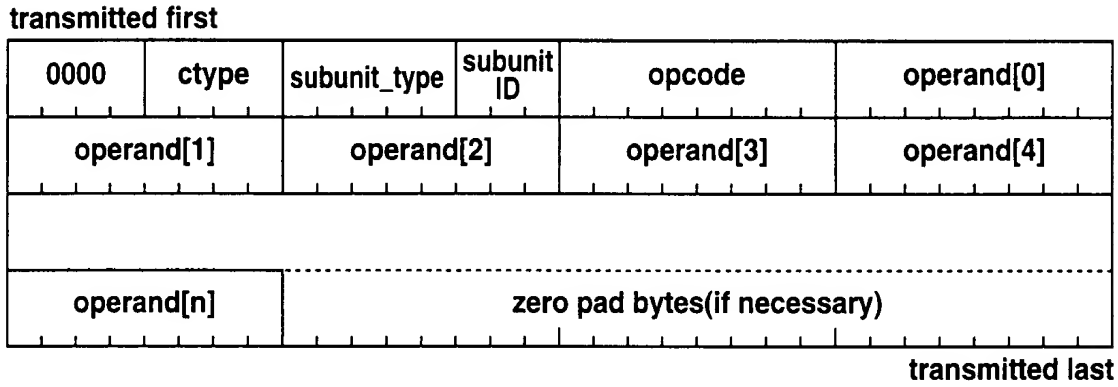
transmitted first
0000
ctype
subunit_type
subunit ID
opcode
operand[0]
operand[1]
operand[2]
operand[3]
operand[4]
operand[n]
zero pad bytes(if necessary)
transmitted last

FIG.9

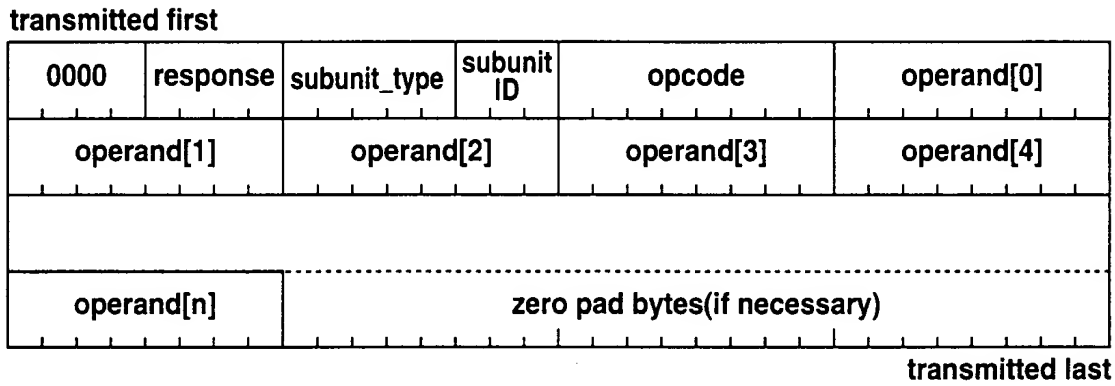
transmitted first
0000
response
subunit_type
subunit ID
opcode
operand[0]
operand[1]
operand[2]
operand[3]
operand[4]
operand[n]
zero pad bytes(if necessary)
transmitted last

FIG.10

09857648 .062599

Value	Command type
0	CONTROL
1	STATUS
2	SPECIFIC INQUIRY
3	NOTIFY
4	GENERAL INQUIRY
5-7	Reserved for future specification
8-F_{16}	Reserved for response codes

FIG.11

Subunit type	Meaning
0	Video monitor
1-2	Reserved for future specification
3	disc recorder/player(audio or video)
4	tape recorder/player(audio or video)
5	Tuner
6	Reserved for future specification
7	Video camera
8-$1B_{16}$	Reserved for future specification
$1C_{16}$	Vendor unique
$1D_{16}$	Reserved for all subunit types
$1E_{16}$	subunit_type extented to next byte
$1F_{16}$	Unit

FIG.12

Subunit type	Meaning
0-4	Instance number
5	subunit_ID extented to next byte
6	Reserved for all instances
7	Ignore

FIG.13

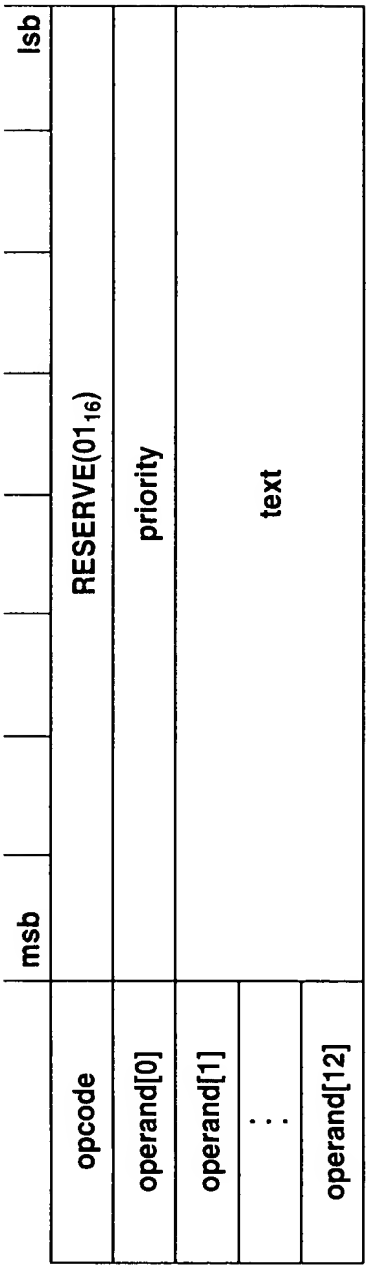
msb
lsb
opcode
RESERVE(01₁₆)
operand[0]
priority
operand[1]
text
operand[12]

FIG.14

Command priority	Stored priority
0-1	priority
02_{16}-$0E_{16}$	priority&$0E_{16}$
$0F_{16}$	priority

FIG.15

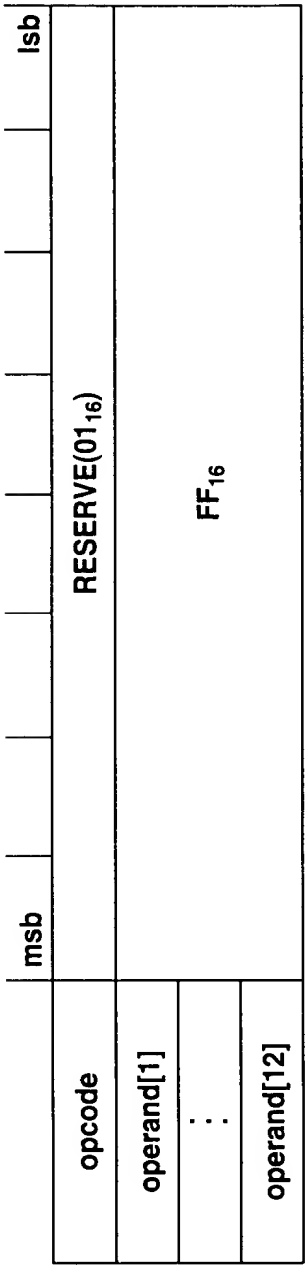

FIG.16

Value	Response
0-7	Reserved for command types
8	NOT IMPLEMENTED
9	ACCEPTED
A_{16}	REJECTED
B_{16}	IN TRANSITION
C_{16}	IMPLEMENTED/STABLE
D_{16}	CHANGED
E_{16}	Reserved for future specification
F_{16}	INTERIN

FIG.17

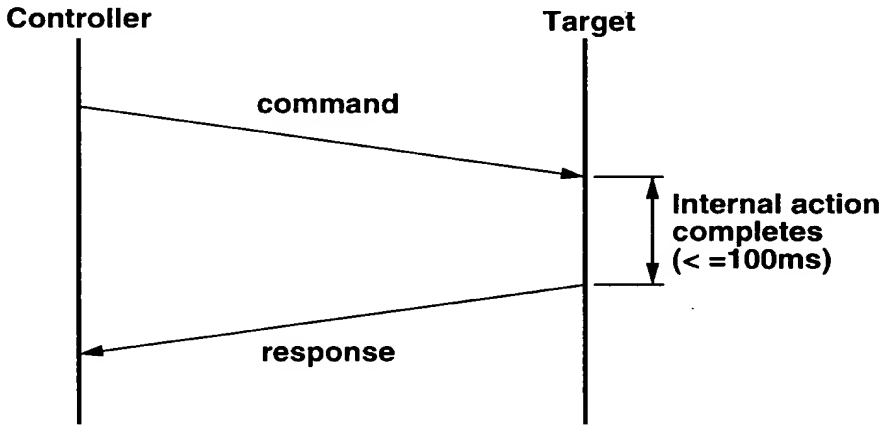

FIG.18

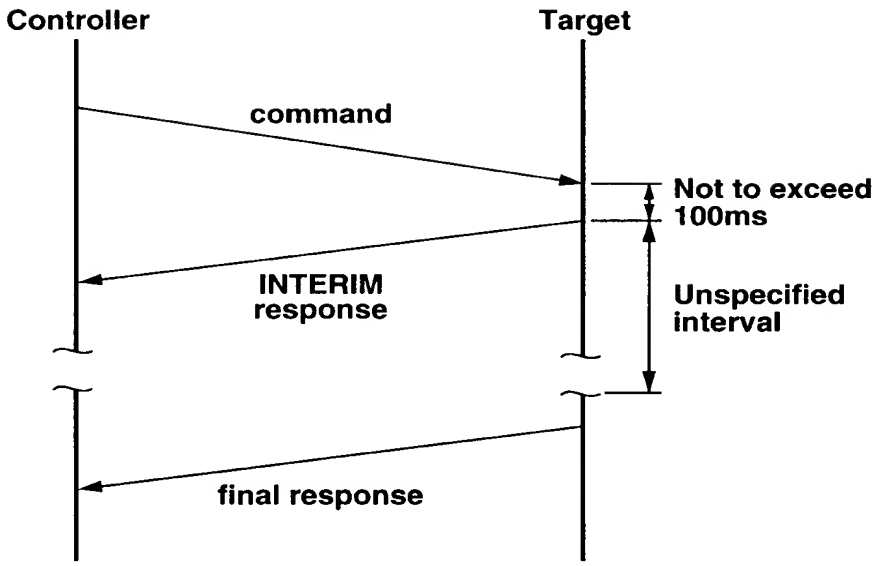
Controller
Target
command
Not to exceed
100ms
INTERIM
response
Unspecified
interval
final response

FIG.19

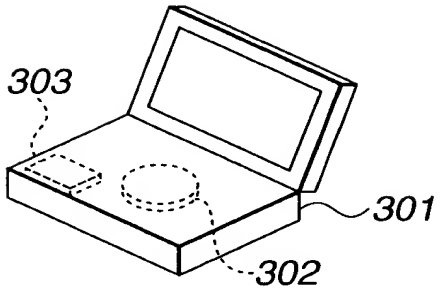

FIG.20A

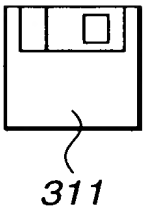

FIG.20B

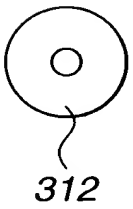

FIG.20C

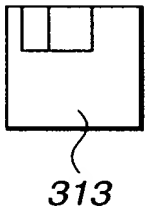

FIG.20D

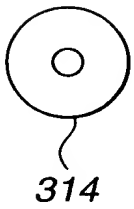

FIG.20E

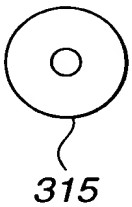

FIG.20F

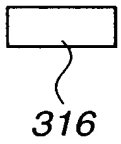

FIG.20G

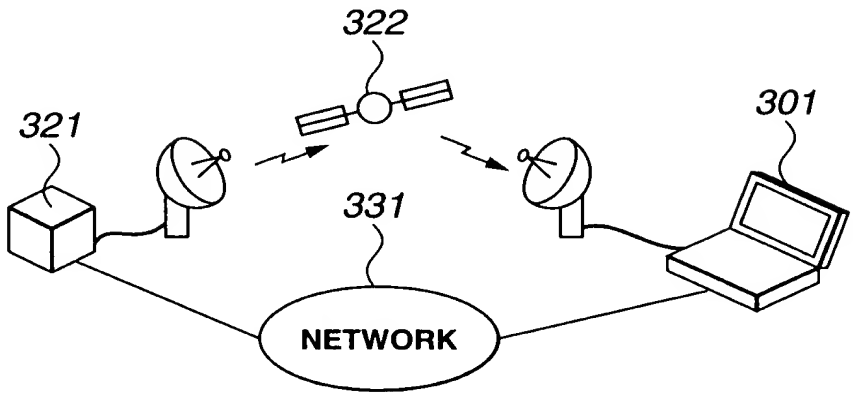

FIG.20H

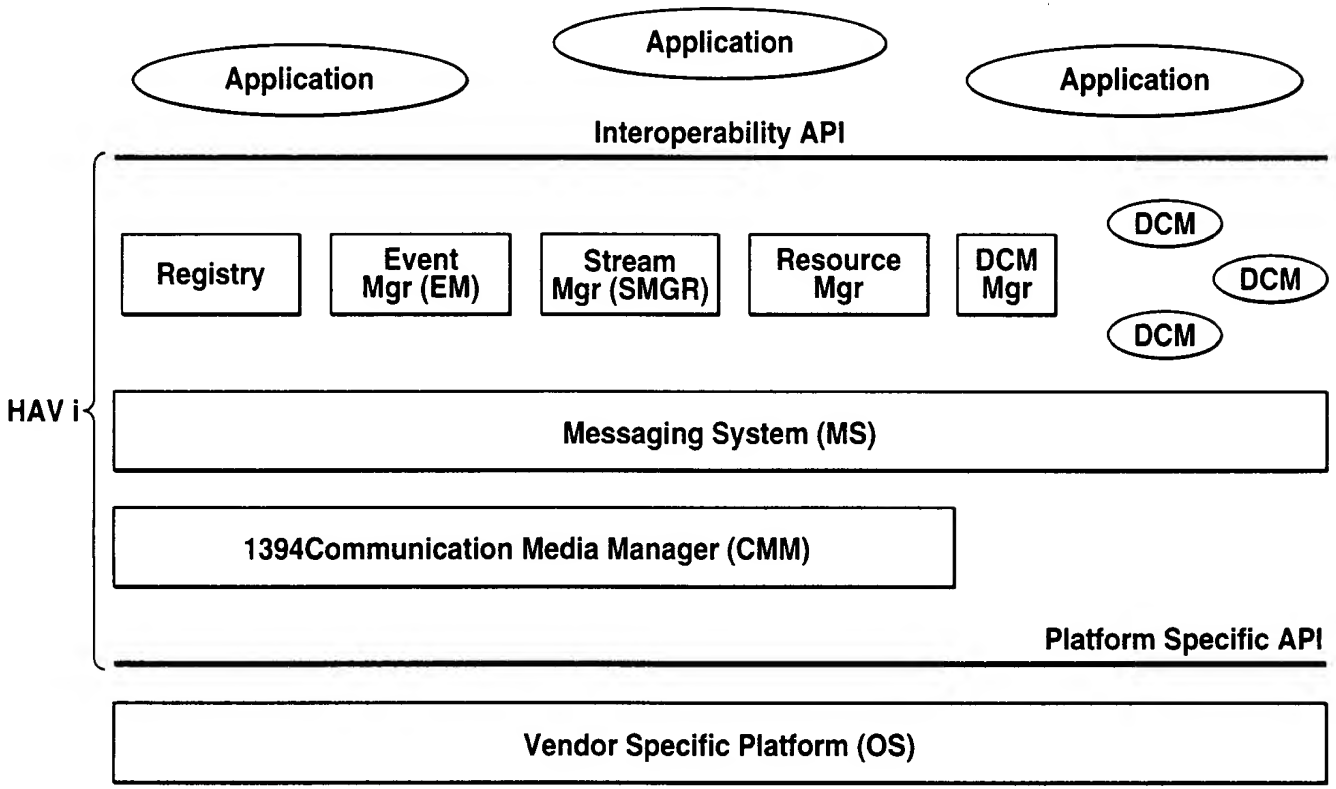
Application
Application
Application
Interoperability API
Registry
Event Mgr (EM)
Stream Mgr (SMGR)
Resource Mgr
DCM Mgr
DCM
DCM
DCM
HAV i
Messaging System (MS)
1394Communication Media Manager (CMM)
Platform Specific API
Vendor Specific Platform (OS)

FIG.21

Device Type/Element	FAV	IAV	BAV	LAV
Java Runtime	✓			
DDI Controller	[✓]	[✓]		
Resource Manager	✓	[✓]		
Stream Manager	✓	[✓]		
DCM Manager	✓	[✓]		
Registry	✓	✓		
Event Manager	✓	✓		
Messaging System	✓	✓		
1394Communication Media Manager	✓	✓		
HAV i SDD data	✓	✓	✓	
DCM	✓	[✓]	✓	✓

FIG.22

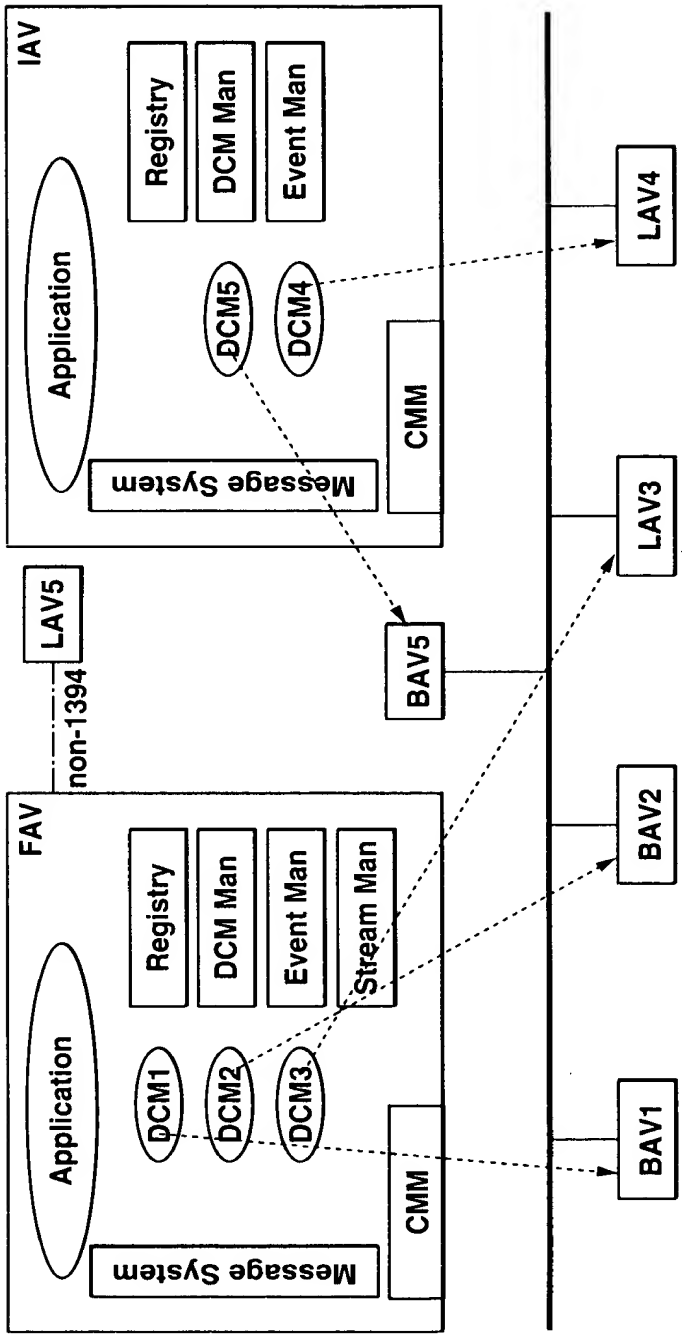
IAV
Application
Registry
DCM Man
Event Man
DCM5
DCM4
Message System
CMM
LAV5
non-1394
BAV5
LAV4
LAV3
BAV2
BAV1
FAV
Application
Registry
DCM Man
Event Man
Stream Man
DCM1
DCM2
DCM3
Message System
CMM

FIG.23

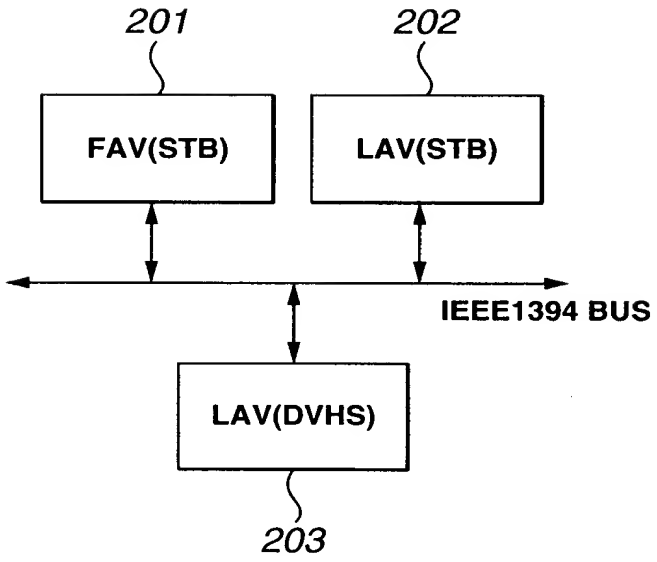

FIG.24

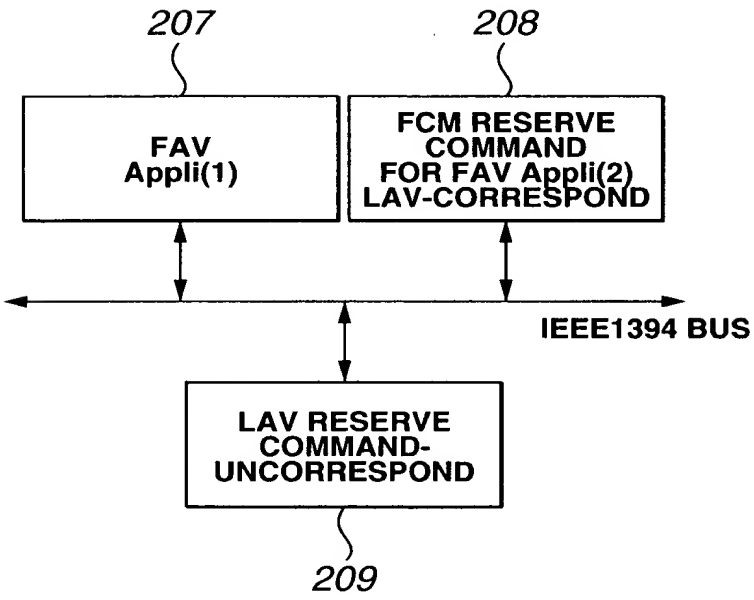
207
208
FAV
Appli(1)
FCM RESERVE
COMMAND
FOR FAV Appli(2)
LAV-CORRESPOND
IEEE1394 BUS
LAV RESERVE
COMMAND-
UNCORRESPOND
209

FIG.25

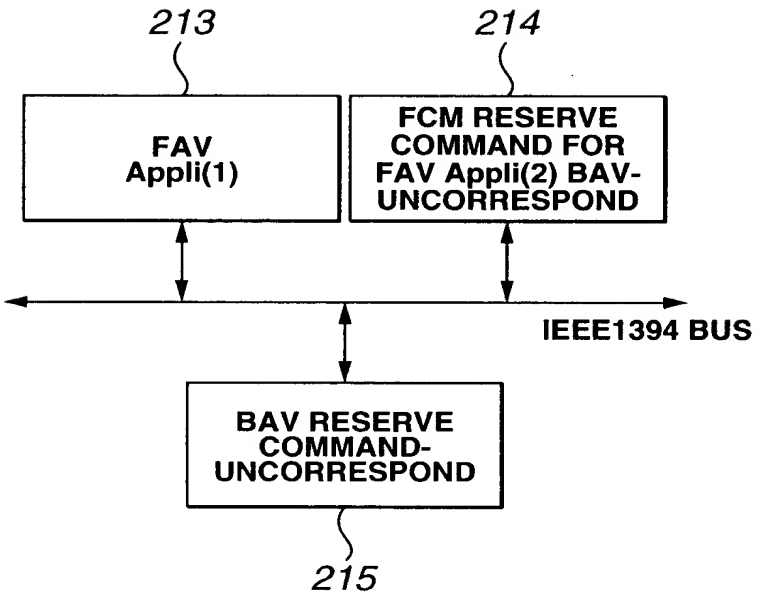
213
214
FAV
Appli(1)
FCM RESERVE
COMMAND FOR
FAV Appli(2) BAV-
UNCORRESPOND
IEEE1394 BUS
BAV RESERVE
COMMAND-
UNCORRESPOND
215

FIG.26

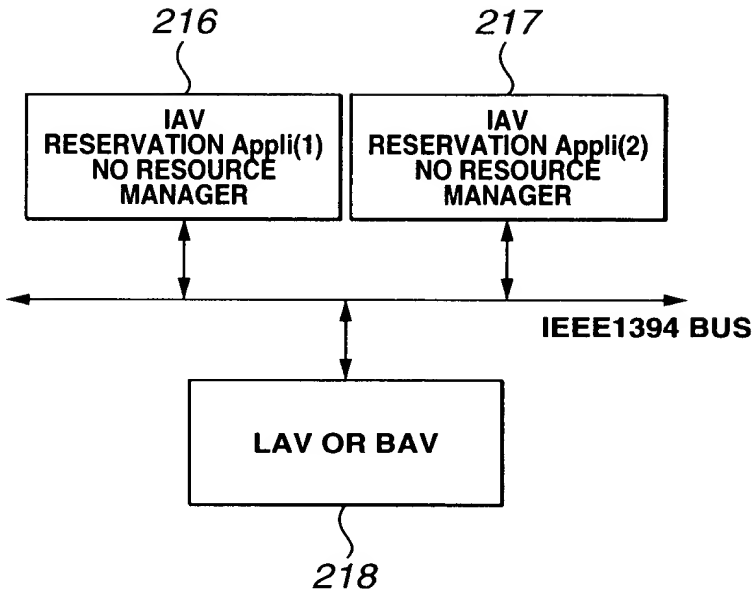
216
217
IAV
RESERVATION Appli(1)
NO RESOURCE
MANAGER
IAV
RESERVATION Appli(2)
NO RESOURCE
MANAGER
IEEE1394 BUS
LAV OR BAV
218

FIG.27